AMENDMENTS TO THE CLAIMS

1. (Previously presented) A cross-linked composite of boronic acid or a boronic acid derivative such as a boronate, and an organic or organo-metallic moiety having a functionality such as hole transporting, electron transporting and light emitting.

2. (Previously presented) A cross-linked composite according to Claim 1, wherein the boronic acid or boronic acid derivative is selected from the group consisting of a) a single boronic acid, b) a composite of two or more different boronic acids, c) a composite of one boronic acid or its derivative with one or more other materials which contain groups reactive with boronic acid or its derivative, and d) a composite of any number of boronic acids or its derivatives (at least one) with any number and any kinds of other materials which contain groups listed in the formulas at Figure 10, reactive with boronic acid or its derivative.

3. (Currently amended) A cross-linked composite according to Claim 1 ~~or 2~~, wherein the organic or organometallic moiety is a mixture of such moieties having a different functionality.

4. (Previously presented) A method of making a cross-linked composite of boronic acid or a boronic acid derivative such as a boronate, and an organic or organo-metallic moiety having a functionality such as hole transporting, electron transporting and light emitting, comprising attaching to boronic acid or a boronic acid derivative, an organic or organo-metallic moiety having a functionality such as hole transporting, electron transporting and light emitting, and cross-linking.

5. (Previously presented) A method according to Claim 4, wherein the boronic acid or boronic acid derivative is selected from the group consisting of a) a single boronic acid, b) a composite of two or more different boronic acids, c) a composite of one boronic acid or its derivative with one or more other materials which contain groups reactive with boronic acid or its derivative, and d) a composite of any number of boronic acids or its derivatives (at least one) with any number and any kinds of other materials

which contain groups listed in the formulas at Figure 10, reactive with boronic acid or its derivative.

6. (Currently amended) A method according to Claim 4 ~~or 5~~, wherein the organic or organometallic moiety is a mixture of such moieties having a different functionality.

7. (Previously presented) A multi-layer material comprising a plurality of layers of a cross-linked composite of boronic acid or a boronic acid derivative such as a boronate, and an organic or organo-metallic moiety having a functionality such as hole transporting, electron transporting and light emitting, wherein each layer has a different functionality.

8. (Previously presented) A multi-layer material according to Claim 7, wherein the boronic acid or boronic acid derivative is selected from the group consisting of a) a single boronic acid, b) a composite of two or more different boronic acids, c) a composite of one boronic acid or its derivative with one or more other materials which contain groups reactive with boronic acid or its derivative, and d) a composite of any number of boronic acids or its derivatives (at least one) with any number and any kinds of other materials which contain groups listed in the formulas at Figure 10, reactive with boronic acid or its derivative.

9. (Currently amended) A multi-layer material according to Claim 7 ~~or 8~~, having two functional layers, one functional layer having a hole transporting functionality, and the other functional layer having a a light emitting functionality and an electron transporting functionality.

10. (Previously presented) A multi-layer material according to Claim 9, wherein the layer having the hole transporting functionality comprises CzBA, and wherein the layer having the light emitting functionality and an electron transporting functionality is F_nBA, wherein n= 2, 3 or 4.

11. (Previously presented) A method of making a multi-layer material comprising a plurality of layers of a cross-linked composite of boronic acid or a boronic acid derivative such as a boronate, and an organic or organo-metallic moiety having a functionality such as hole transporting, electron transporting and light emitting, the method comprising forming on a substrate, a layer of a composite of boronic acid or a boronic acid derivative and an organic or organo-metallic moiety having a functionality such as hole transporting, electron transporting and light emitting, and cross-linking, and forming at least one another such layer having a different functionality such as hole transporting, electron transporting and light emitting and cross-linking.

12. (Previously presented) A method according to Claim 11, wherein the boronic acid or boronic acid derivative is selected from the group consisting of a) a single boronic acid, b) a composite of two or more different boronic acids, c) a composite of one boronic acid or its derivative with one or more other materials which contain groups reactive with boronic acid or its derivative, and d) a composite of any number of boronic acids or its derivatives (at least one) with any number and any kinds of other materials which contain groups listed in the formulas at Figure 10, reactive with boronic acid or its derivative.

13. (Currently amended) A method according to Claim ~~11 or~~ 12, wherein the organic or organometallic moiety is a mixture of such moieties having a different functionality.

14. (Currently amended) A method according to Claim 11, ~~12 or 13~~, wherein said layer is formed on the substrate by spin coating from solution in an organic solvent and cross-linked, and successively forming and cross-linking said at least one another such layer.

15. (Previously presented) A method according to Claim 14, wherein the organic solvent is selected from the group consisting of THF, DMF and acetone.

16. (Previously presented) A multi-layer photoelectronic device, comprising in sequence, a transparent substrate layer, a transparent electrode layer, a layer of a transparent cross-linked composite of boronic acid or a boronic acid derivative such as a boronate, and an organic or organo-metallic moiety having a functionality such as hole transporting, electron transporting and light emitting, at least one another such layer having a different functionality such as hole transporting, electron transporting and light emitting, and another electrode layer.

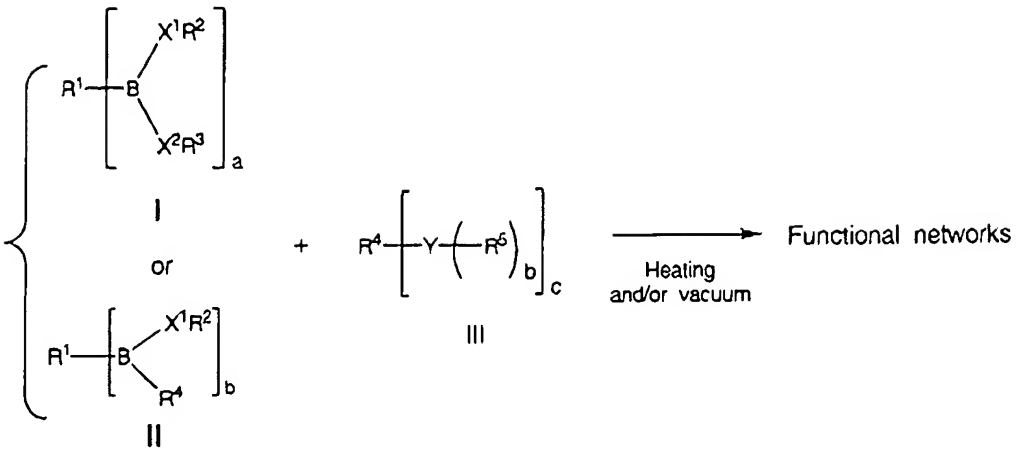
18. (Currently amended) A multi-layer photoelectronic device according to Claim ~~16 or~~ 17, wherein the organic or organometallic moiety is a mixture of such moieties having a different functionality.

19. (Currently amended) A multi-layer photoelectronic device according to Claim ~~16, 17 or~~ 18, having two functional layers, one functional layer having a hole transporting functionality, and the other functional layer having a a light emitting functionality and an electron transporting functionality.

20. (Currently amended) A multi-layer photoelectronic device according to Claim ~~16, 17, 18 or~~ 19, wherein the layer having the hole transporting functionality comprises CzBA, and wherein the layer having the light emitting functionality and an electron transporting functionality is F_nBA, wherein n= 2, 3 or 4.

21. (Previously presented) A multi-layer photoelectronic device according to Claim 20, wherein the transparent substrate is glass, the transparent electrode is indium tin oxide and the another electrode layer is Mg:Ag.

22. (Previously presented) A method of making cross-linked functional networks, comprising reacting compound of structural formula I or structural formula II with a compound of structural formula III(as shown in figure 10), and cross-linking



wherein,

R^1,and R^4 = alkyl, aryl, or other groups, either organic or inorganic, but at least one of them contains functionality; they can be of small molecular weights or high molecular weights.

R^2, R^3, R^5 = H, alkyl, aryl, they may be same or different, but at least one of them is H.

X^1, X^2 = O, S, or N, they may be same or different.

Y = O, S, N (or NH), BO_2, SiO_2, AlO_2, TiO_3, etc.

a and c are larger than one.

b equal to 1, 2 or 3.

23. (Currently amended) A method according to Claim ~~4, 5, 6, 11, 12, 13, 14, 15 or 22~~, wherein the cross-linking is effected by heating under vacuum.

24. (Previously presented) A method according to Claim 23, wherein heating is effected at a temperature of from room temperature up to 130 ^{0}C.

25. (Currently amended) A cross-linked functional network, made by a method as claimed in Claim 22~~, 23 or 24~~.